Mumps Revisited

Stacey Anderson, MPH
Jen Fladager, RN
Communicable Disease Epidemiology

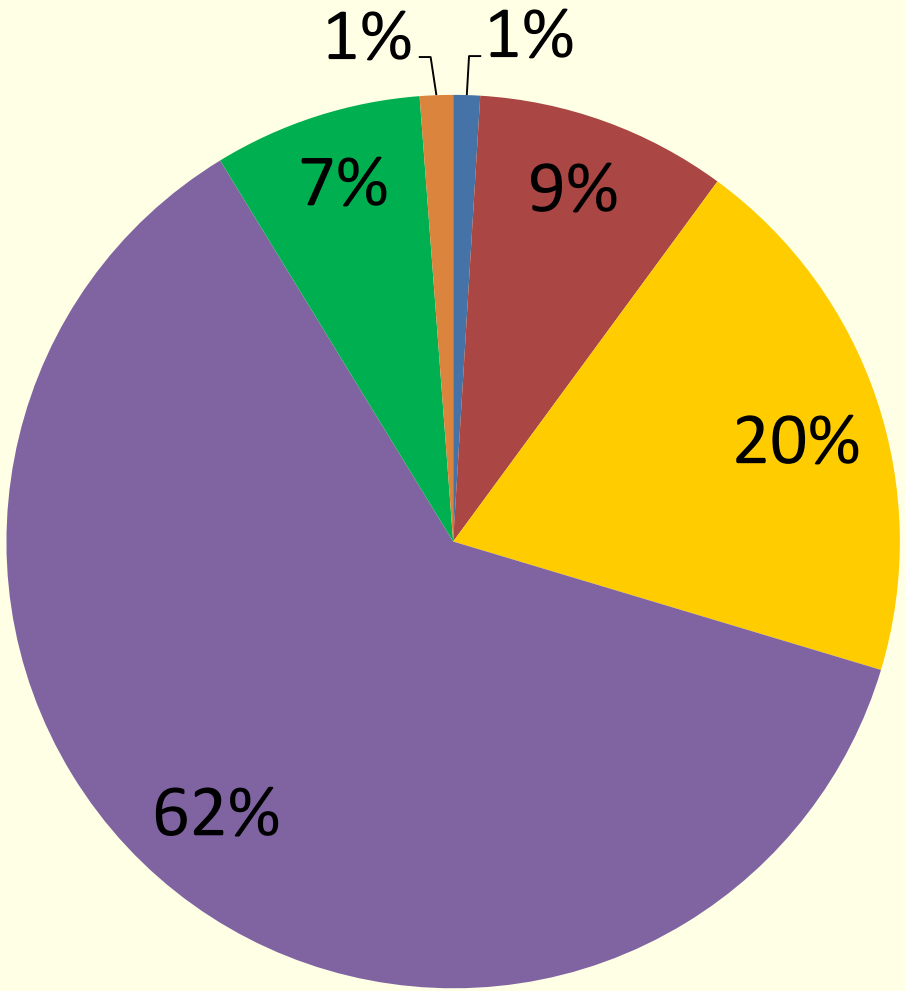
MONTANA DPHHS
Healthy People. Healthy Communities.
Department of Public Health & Human Services

Agenda

- State of the State: VPDs
- What is mumps?
- How do you investigate a suspect case?
- 2016 Montana outbreaks
- Why the return of mumps?

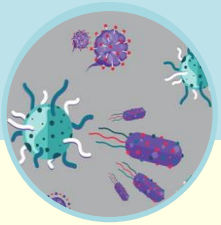
STATE OF THE STATE: VPD IN MONTANA (2012-2016)

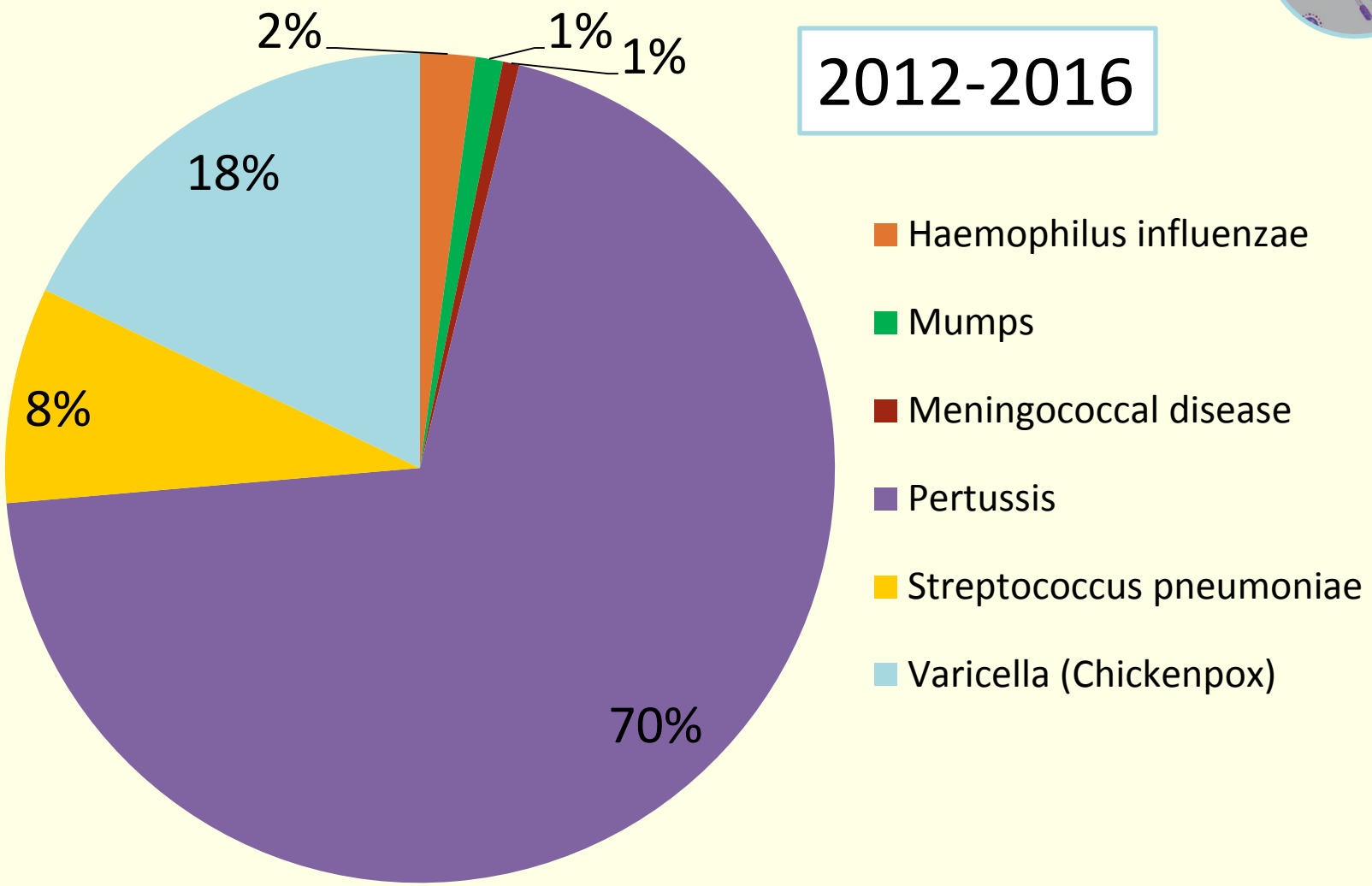
Montana Communicable Diseases, 2012-16



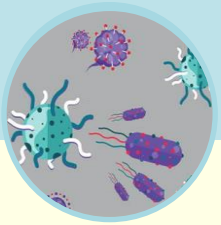
- General Communicable Diseases
- Enteric Diseases
- Hepatitis
- Sexually Transmitted Diseases
- Vaccine Preventable Diseases
- Zoonotic Diseases

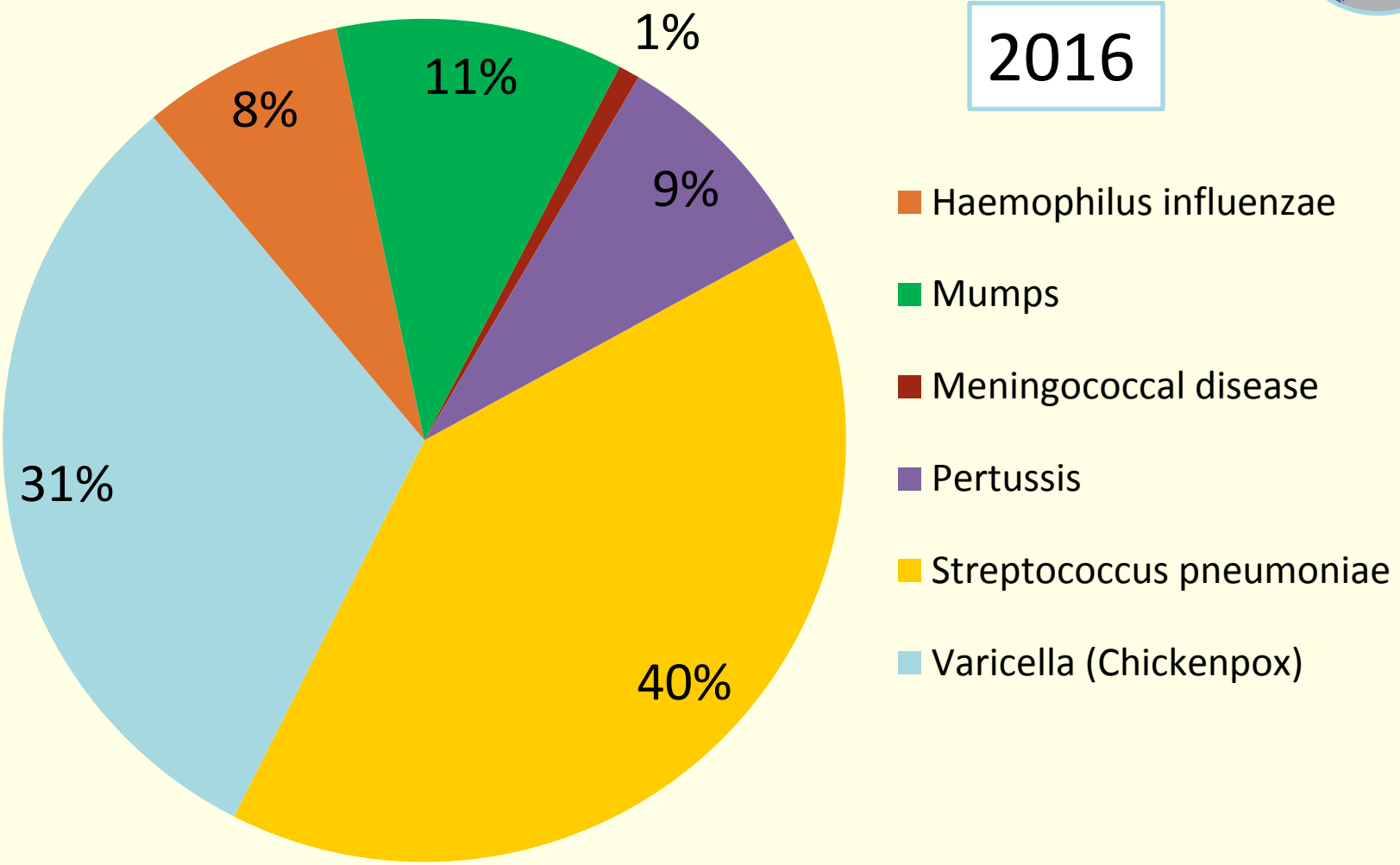
VPD "State of the state"



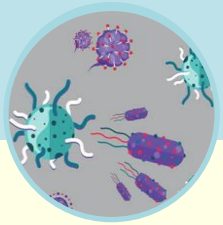


VPD “State of the state”



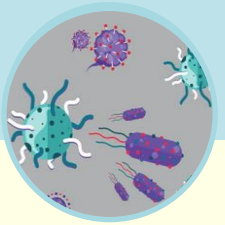


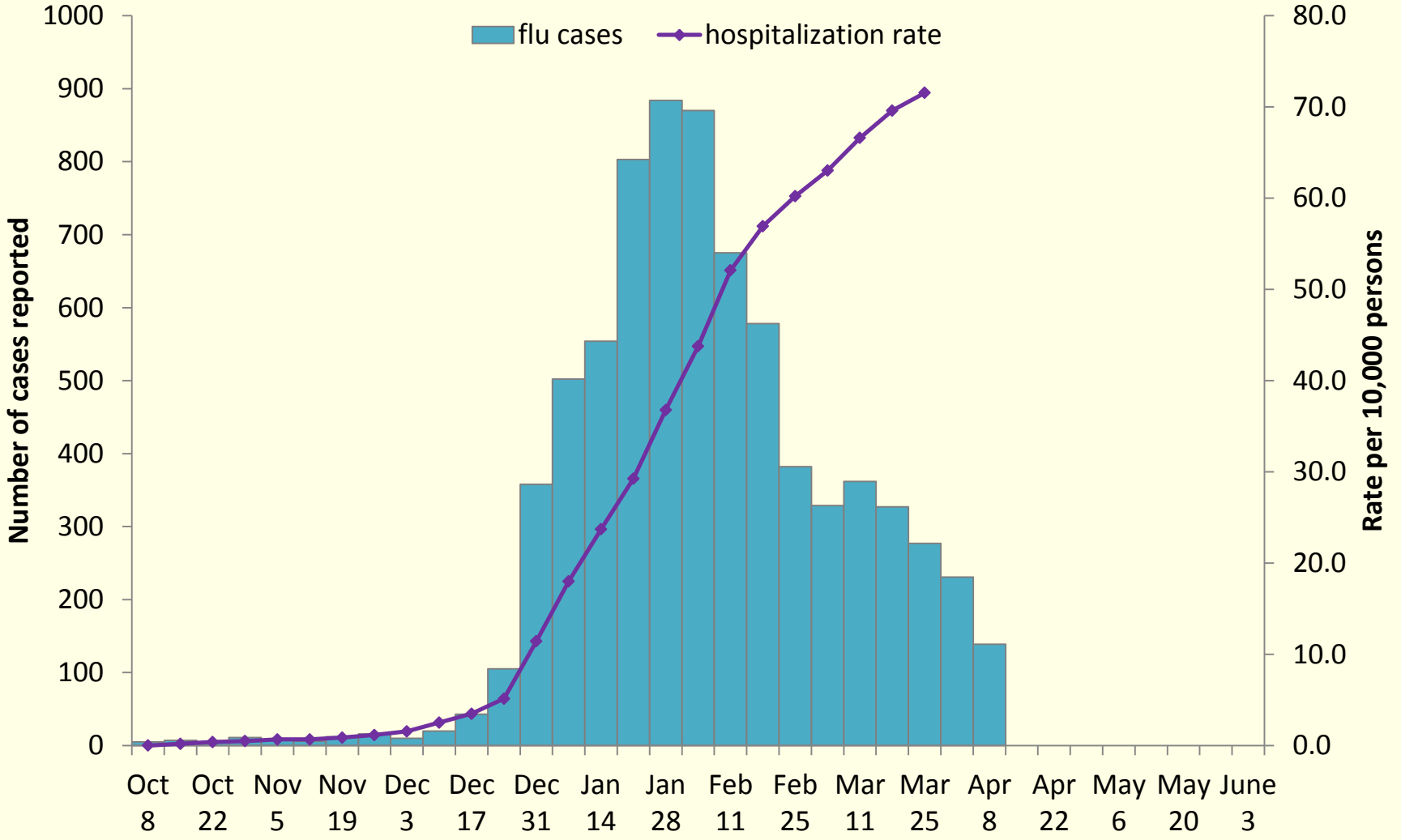
2016–2017 influenza season



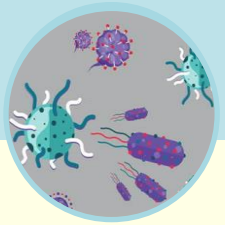
- Increased activity beginning late December
- Predominant strain: Influenza A H3N2
- Vaccine considered a good match
- Majority of hospitalizations >65 years of age
- Most common comorbidities
  - Cardiovascular disease
  - Chronic lung disease
  - Metabolic disease

Reported flu cases and cumulative influenza hospitalization rates -- Montana, 2016-17 season



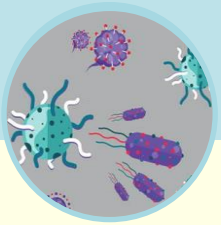


Chickenpox



- Increase in cases over the last few years, largely due to outbreaks
- Change in state law to add varicella vaccine for school entry
- Clinically diagnosed cases may not be chickenpox -- when in doubt, test!
  - PCR or DFA preferred

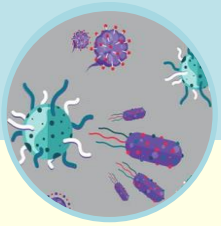
Which is it?



CHICKENPOX

HAND, FOOT, & MOUTH

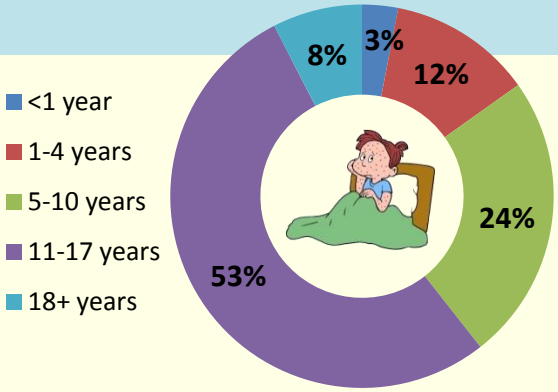
Chickenpox outbreak – Flathead County, 2015

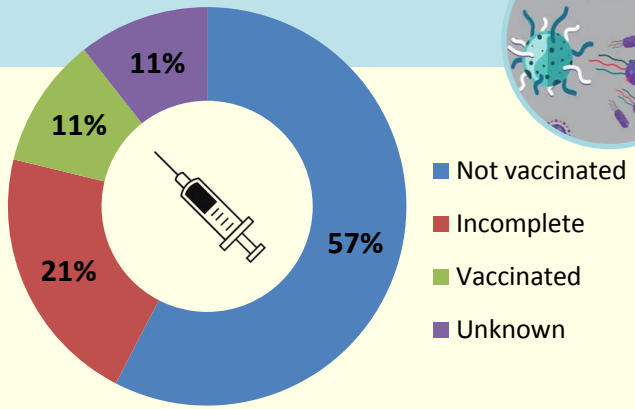


66 cases reported from

11 schools

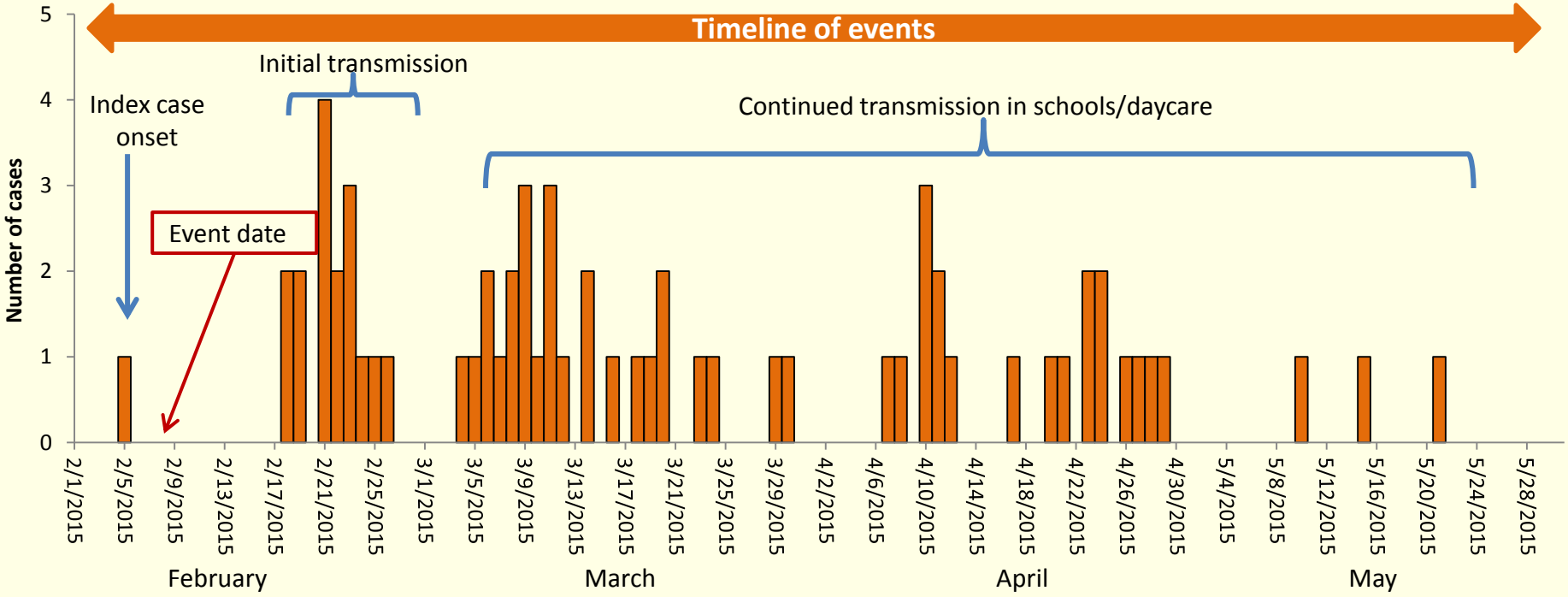
3 daycares





78% school-aged children

11% vaccinated per ACIP recommendations



Mumps revisited

Immunization Road Show 2017

MONTANA DPHHS
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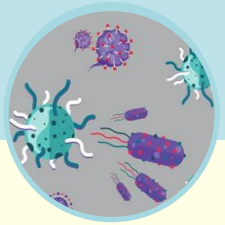
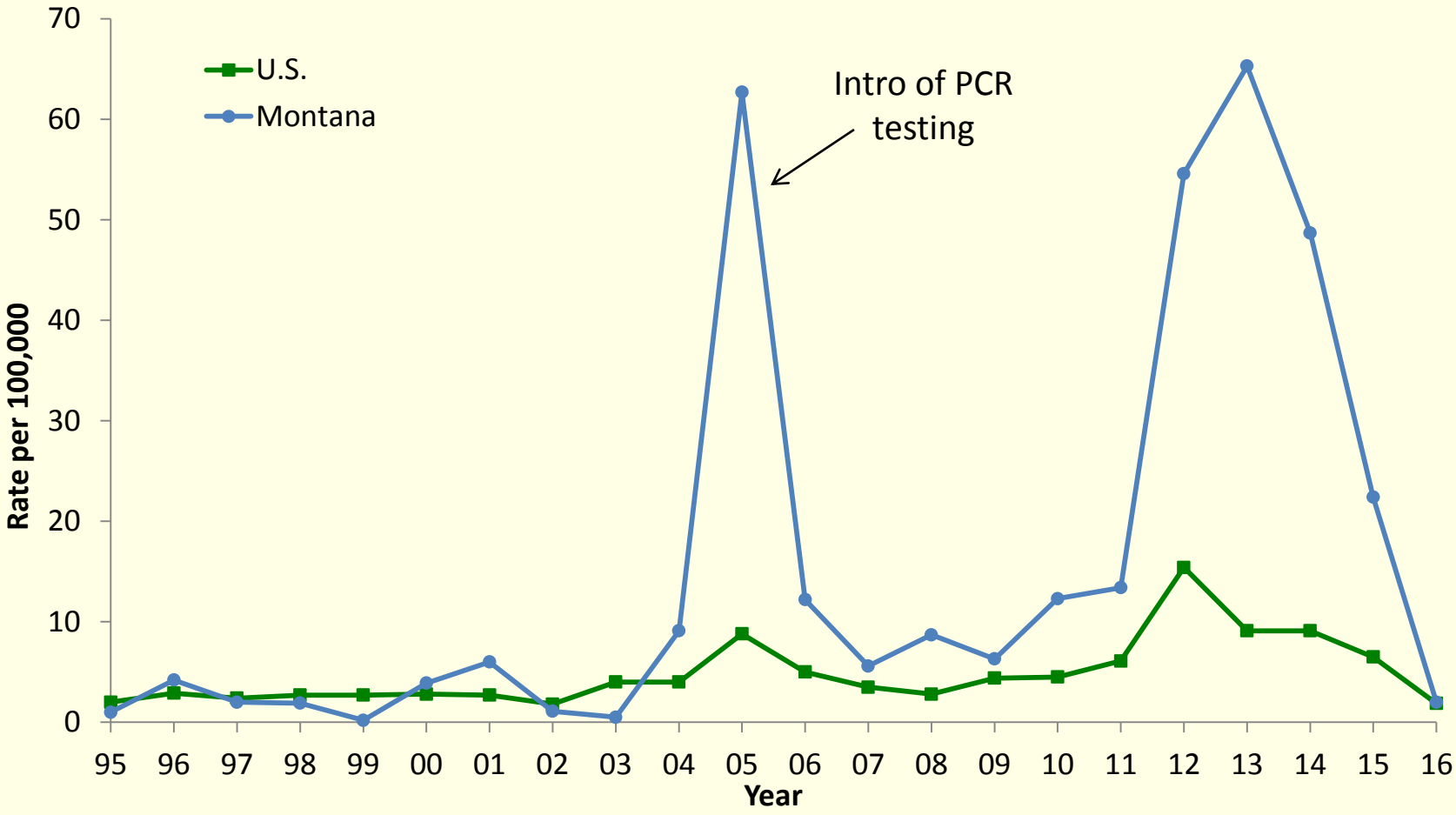
Pertussis

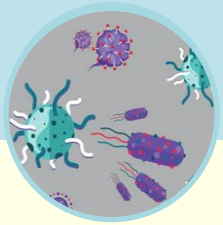


- Cyclic: increased activity every 3–5 years
- 663 cases (2013) to 21 cases (2016)
- Change in state law to add Tdap at 7th grade entry

Pertussis incidence – Montana and the U.S. 1995-2016

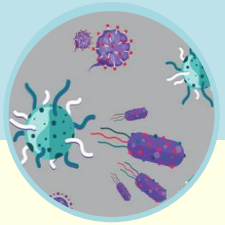


Streptococcus pneumoniae



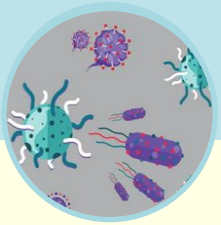
- Can cause a number of conditions but reportable as invasive disease
- Can occur year-round but more common during influenza season
- Typically adults >50 years of age, but can occur in children

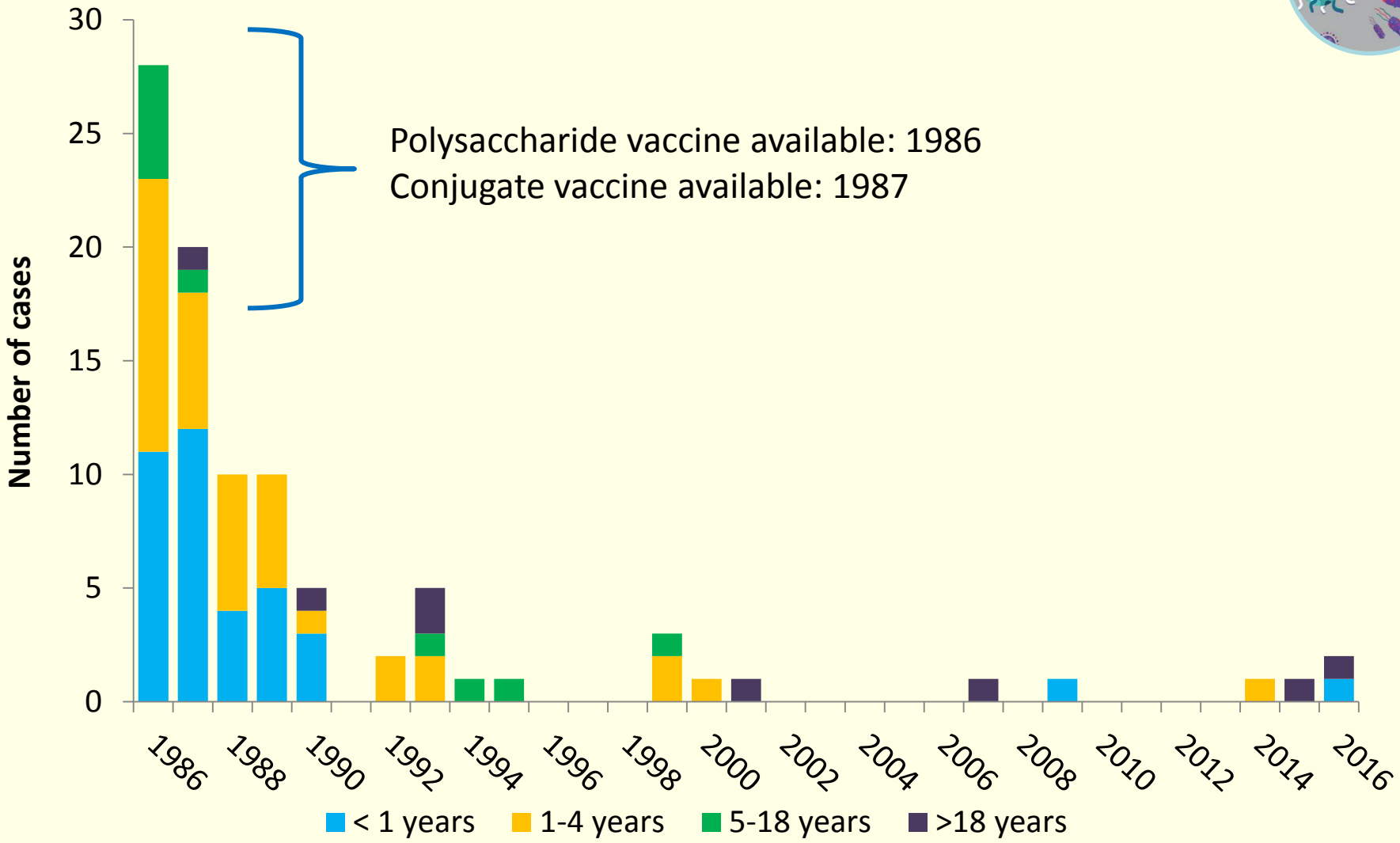
Haemophilus influenzae



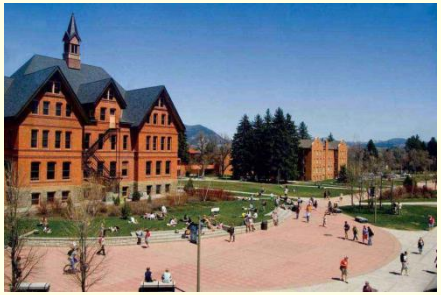
- Invasive disease
- Post-vaccine era shift in cases in from children to older adults
- Decrease in subtype B: average <1 case per year
- Most common subtypes: A and F

Haemophilus influenzae type B invasive disease, Montana 1986-2016





Meningococcal Disease

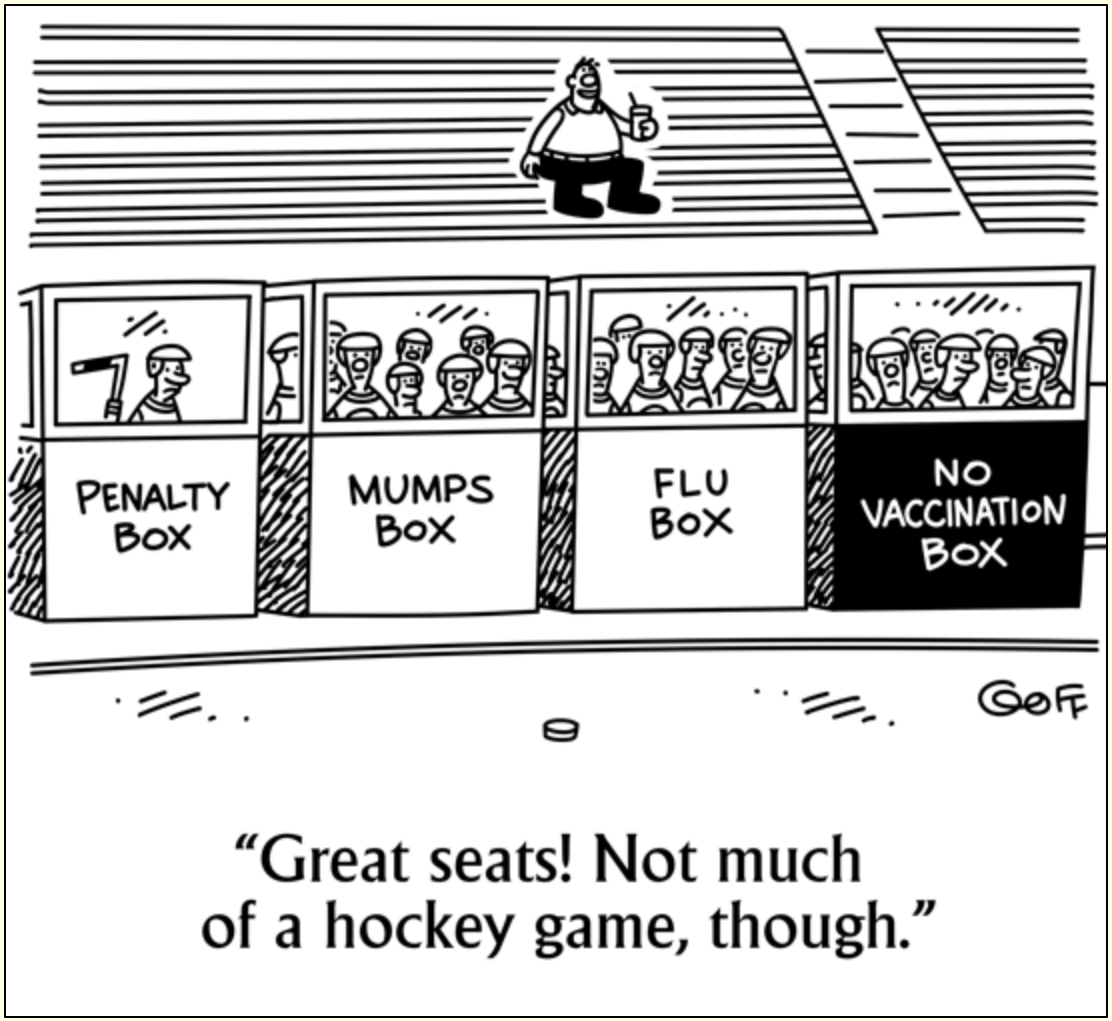


- Average 1-3 cases per year
- Populations in close quarters (dorms, barracks) of most concern

Measles

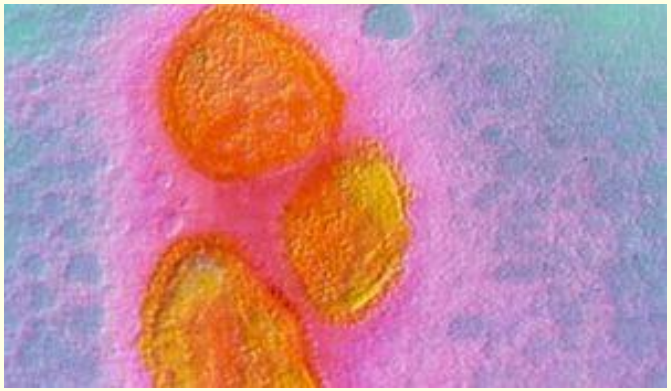
- 1990: Last Montana case
- 2015: outbreaks in U.S.
- 2017: MT contact to a measles case in UT

MUMPS


PENALTY BOX
MUMPS BOX
FLU BOX
NO VACCINATION BOX
GOFF
"Great seats! Not much of a hockey game, though."

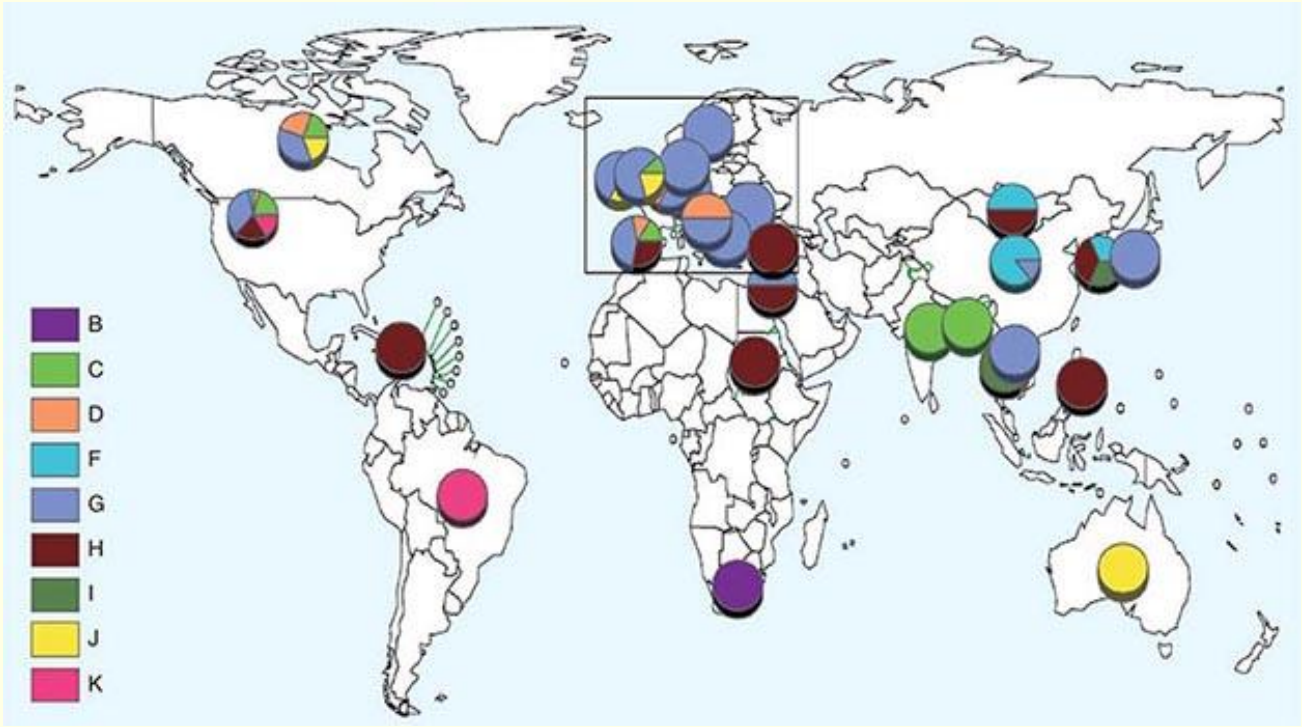
Mumps

- Viral infection of the salivary glands
- Sporadic outbreaks (2006, 2009, 2016)
  - college campuses
  - hockey leagues
- 5,311 cases reported in 2016 (U.S.)

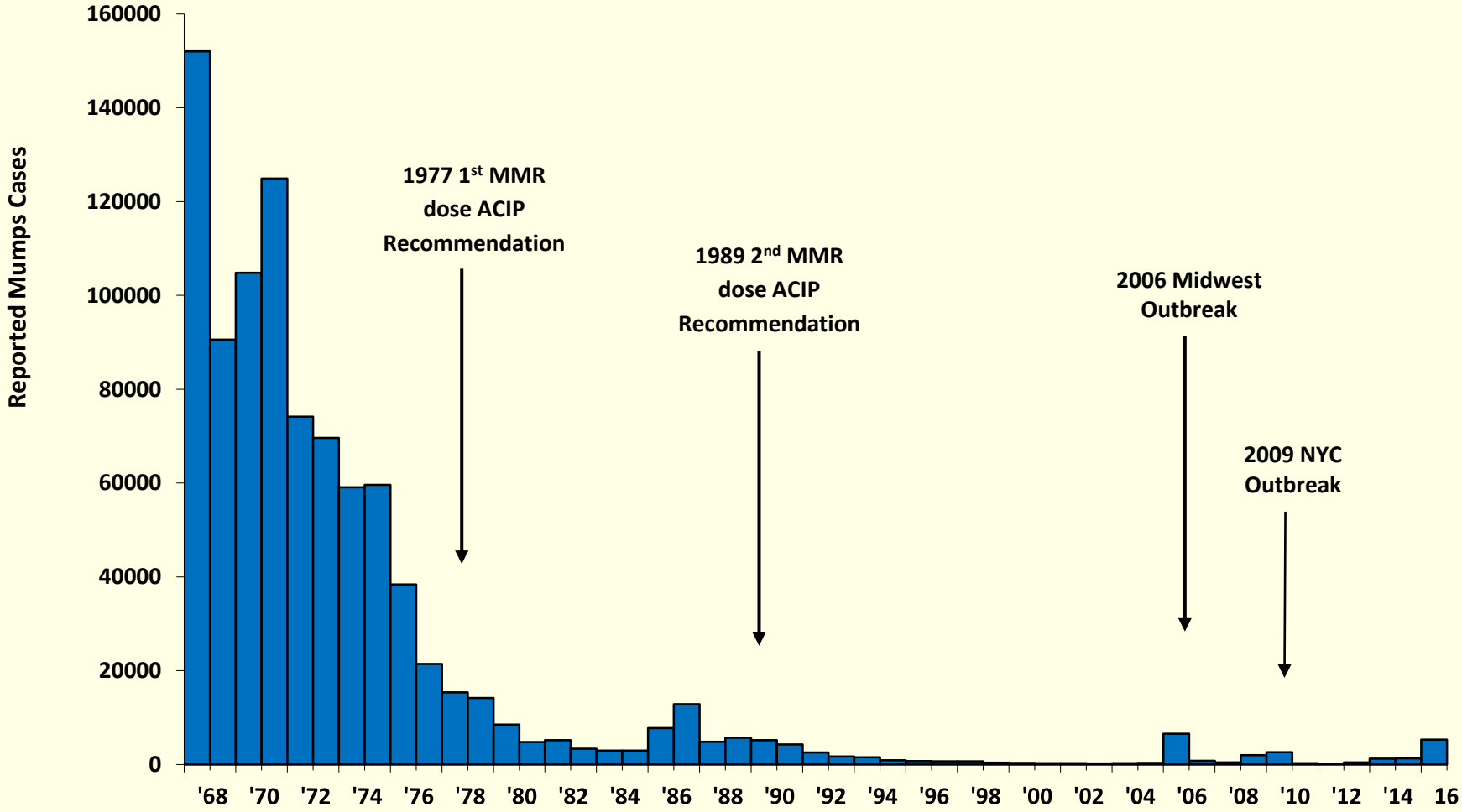


Mumps

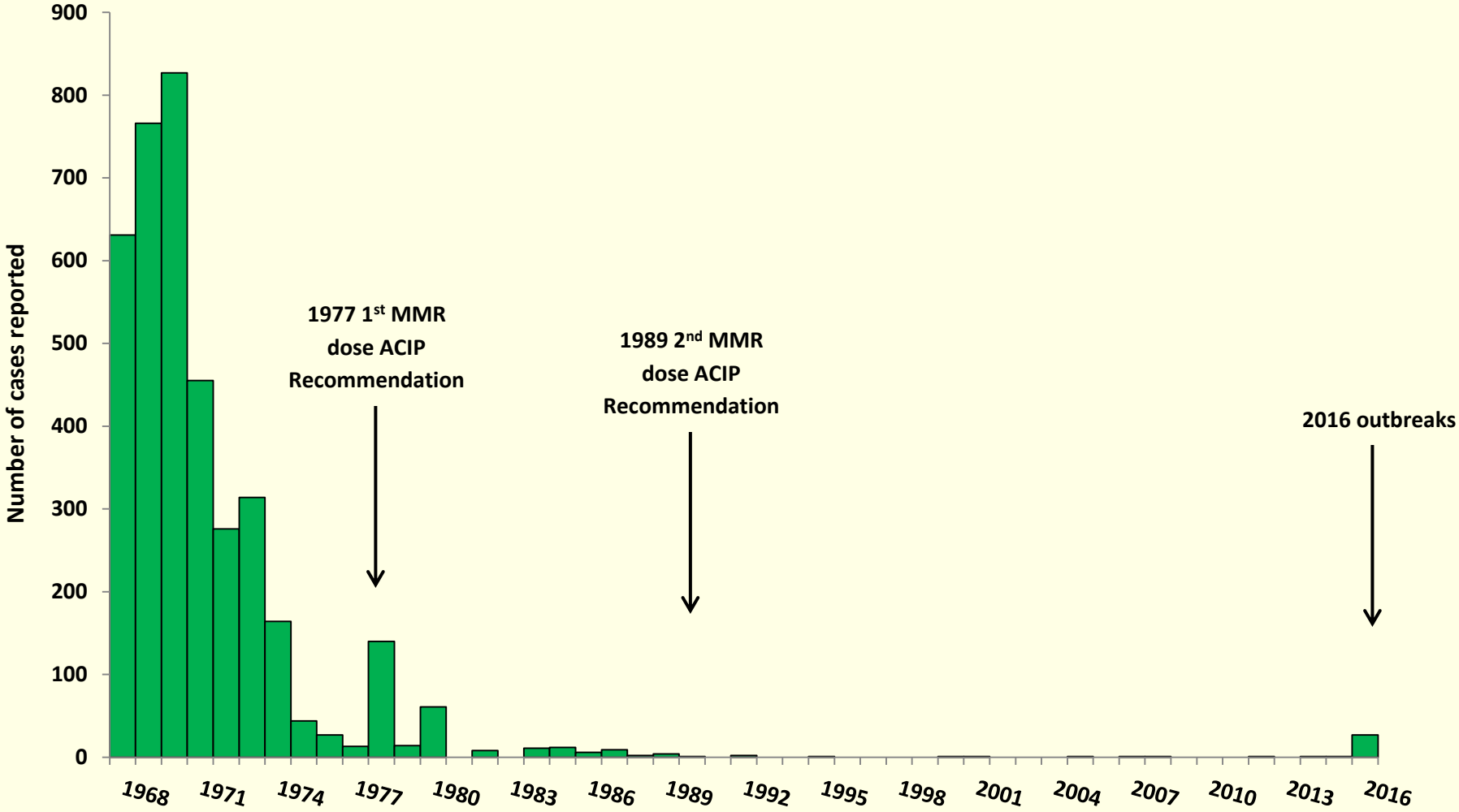
Mumps genotypes - worldwide



Epidemiology in the United States: 1968–2016



Epidemiology in Montana: 1968–2016



Transmission

- Respiratory spread
- Infectious period: **2 days before through 5 days after** the onset of parotitis

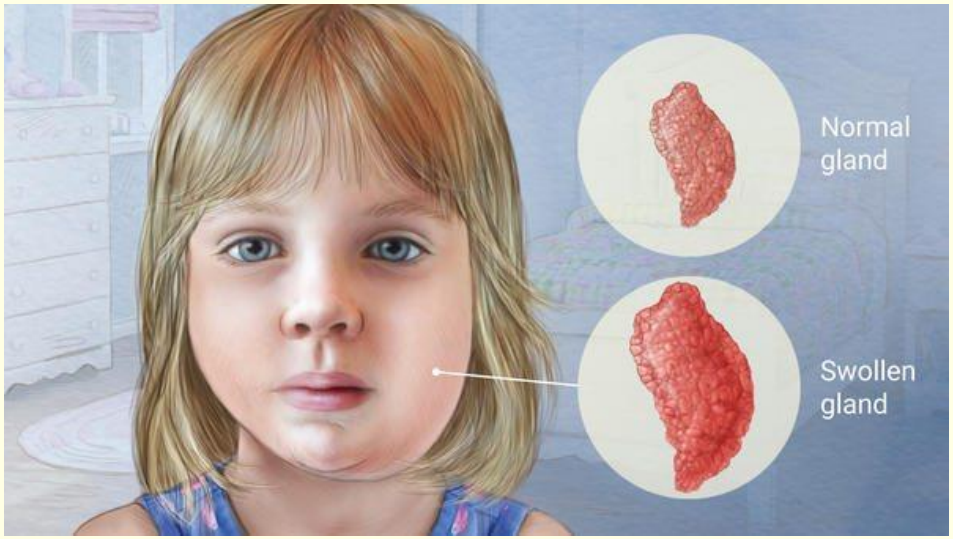
APRIL 2017

2	3		5	6	7	8
9	10	11	12	13	14	15

Signs and symptoms

Appear 12–25 days after exposure (average **16–18 days**)

- Fever
- Headache
- Malaise
- Loss of appetite
- **Parotitis** (unilateral or bilateral)



Signs and symptoms

- Secondary symptoms include:
  - Orchitis
  - Oophoritis
  - Meningitis
  - Encephalitis
  - Deafness

- Asymptomatic infections possible

Testing

- Mumps PCR: detects viral RNA present 1-8 days after onset of parotitis
  - Buccal swab
- Mumps serology:
  - IgM: detects antibodies present at the acute phase of infection (~5 days post onset of symptoms)
  - IgG: detects antibodies present that demonstrate immunity (natural infection or vaccination)

Case investigation

- Confirm the diagnosis!
- Onset date
- Assess vaccination status
- Determine potential exposures
  - Travel
  - Visitors
  - Contact to a previous case

Case investigation

- Assess risk
  - Adults: sensitive occupation
  - Children: daycare, school, sports
- Ensure patient is isolated to home for 5 days post onset of parotitis

Case Investigation

- Identify contacts
  - Determine vaccine status
    - Babies <1 year old too young for vaccine
    - Persons born before 1957 considered immune
    - No data that supports third dose of MMR during outbreaks
  - Monitor for s/s during incubation period
  - Testing as needed

Control measures

- Provide MMR vaccine
- Isolate for 5 days after onset of parotitis
- Identify close contacts
- Monitor for signs and symptoms

Surveillance/Reporting

Healthcare providers

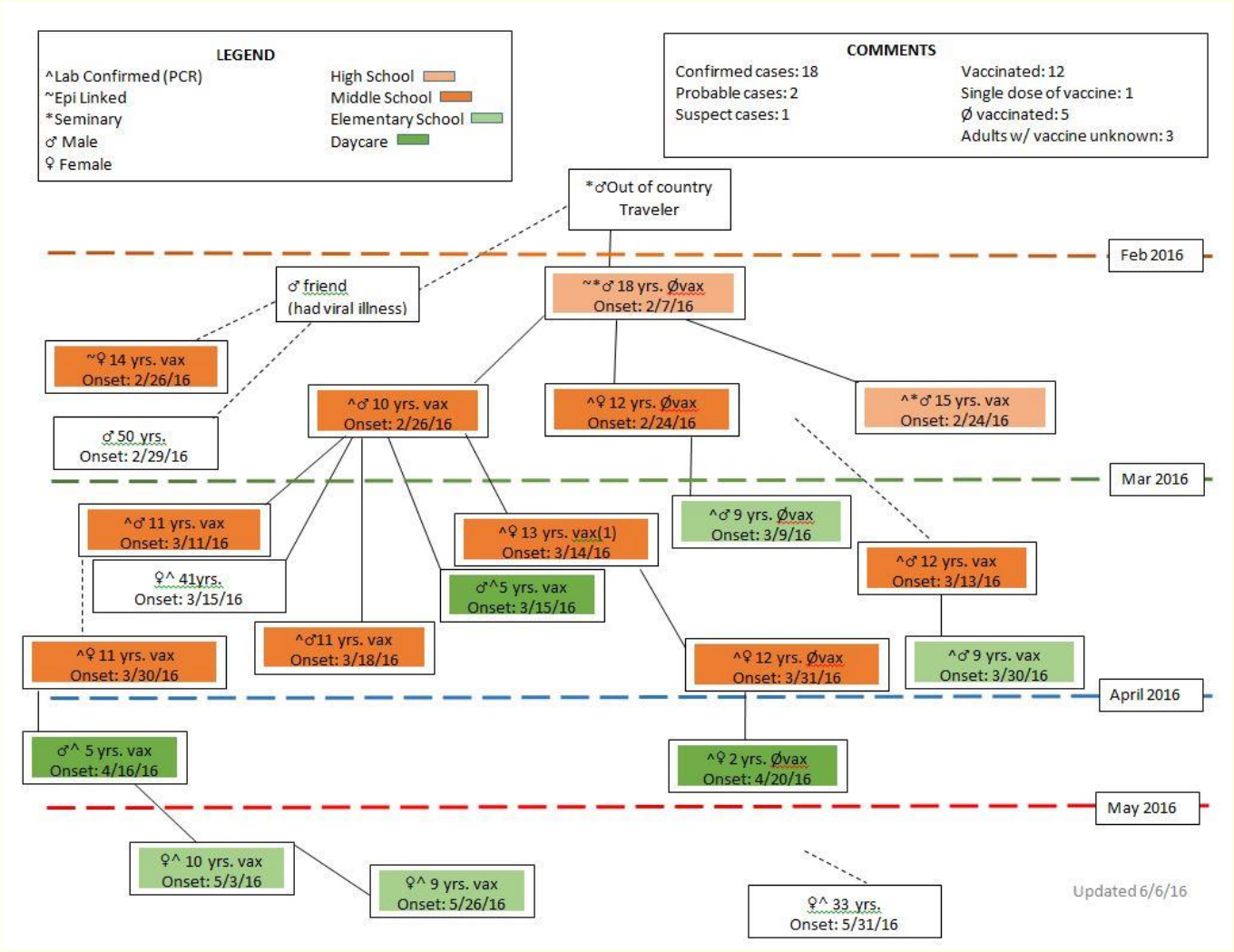
- Surveillance partner to public health
  - Report suspect cases to local health department
  - Consult for testing
- Assess vaccination status and offer vaccine to get up to date as needed

Surveillance/Reporting

<u>School/daycare</u>

- Surveillance partner to public health
  - Assess vaccination status of students/staff to identify those at risk
  - Monitor for signs/symptoms and report to local public health
  - Assist with application of control measures

MONTANA OUTBREAKS



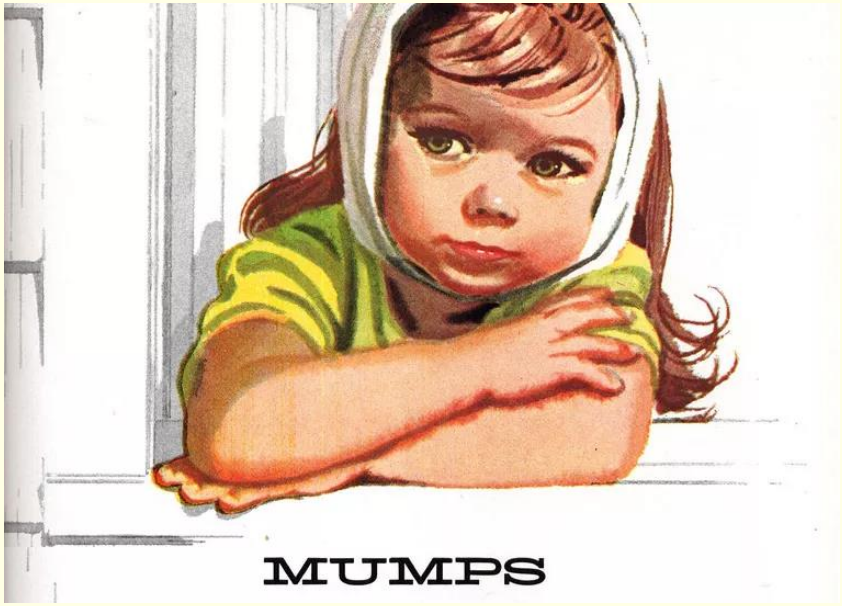
Mumps revisited
Immunization Road Show 2017

Gallatin County Outbreak

- Travel related (Brazil)
- 21 cases
- Age range: 2–50 years
- 8 (38%) cases were not vaccinated appropriately

McCone County Outbreak

- Travel related (Brazil)
- 6 cases (3 adults, 3 children)
- All children fully vaccinated



WHY THE RESURGENCE OF MUMPS?

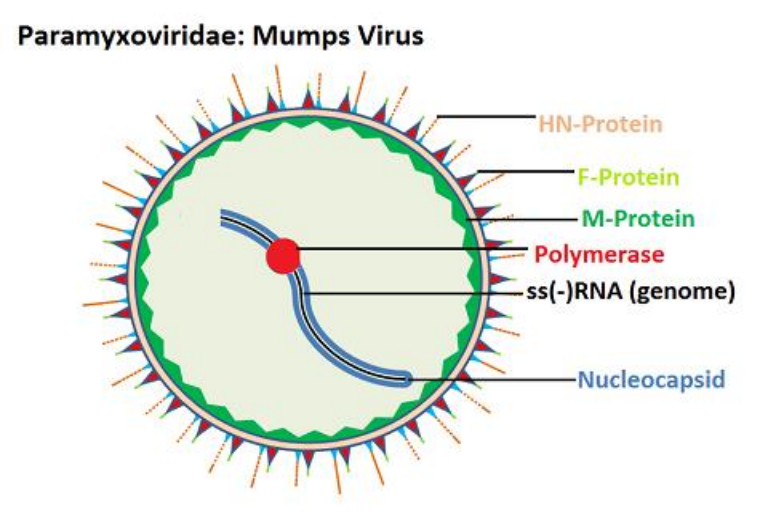
1. Global society

- Population growth = more susceptible people
- Ease of travel
- Speed of travel

2. Microbiology

Mumps is an RNA virus and has the potential to change

- Similar to influenza (2014-15 antigenic drift of the influenza A strain)



3. Vaccine effectiveness

MMR is **88% effective against mumps** with 2 doses

If 100 vaccinated people were exposed to mumps, 12 would still get disease.

- Recommendation for 2nd dose in 1989
- Waning immunity
- CDC plans to evaluate the potential for adding a 3rd dose to the series

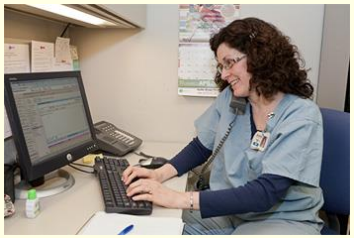
4. Reluctance to vaccinate

Vaccination works best when a population is >90% vaccinated (Herd Immunity)

- Montana stats for MMR in 2015
  - 19-35 months: 91.7% (±3.7)
  - Teens: 90.1% (±3.4)
- Increase in religious exemptions in MT and the U.S.

Take-home points:

Recognize



Report

Test

Protect

Communicable Disease Epidemiology: 444-0273